

LandMark™ 10 IMU



- Low Cost & Rugged IMU
- Vertical Gyro Option Available
Pitch & Roll Angles $\pm 0.25^\circ$
- Low Gyro Noise $< 0.012^\circ/\text{sec}/\sqrt{\text{Hz}}$ 1σ
- Low Accel Noise $< 0.07\text{mg}/\sqrt{\text{Hz}}$ 1σ
- In Run Gyro Bias $25^\circ/\text{hour}$ 1σ
- Fully Temperature Compensated Bias and Scale Factor
- Compensated Misalignment 1mrad and g-Sensitivity $< 0.03^\circ/\text{sec}/\text{g}$ 1σ
- Low Power $< 440\text{mW}$ watt typical
- Low Voltage $+3.1$ to $+5.5\text{V}$ (single sided)
- Light Weight < 107 grams
- Small Size $< 72\text{cm}^3/4.4\text{in}^3$
- RS485 Output to 500 Hz (user selectable)
- Bandwidth Filtering Capability
- External Sync Input (1 kHz or 1pps)
- Internal Vibration Isolation
- Precision Alignment
- 3 Internal Temperature Sensors
- Self Test
- Shock Resistant

Export Classification:
Commerce ECCN7A994 (NRL)



Airborne Platform Stabilization
Antenna Stabilization & Pointing
EO/IR Stabilization
LIDAR Stabilization
Navigation
Flight Testing
Racing Yacht Marine Compass

**Low Noise & Excellent Bias
Rugged Economy Class IMU**

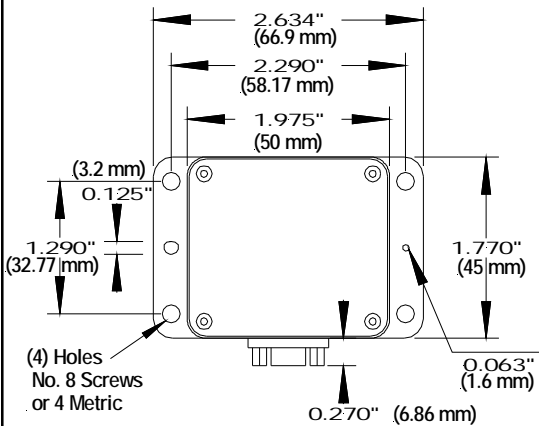


High Performance Inertial MEMS

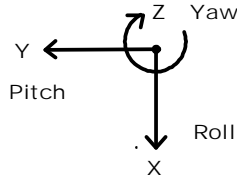
Gladiator Technologies Division
LKD Aerospace, Inc
8020 Bracken Place SE
Snoqualmie, WA 98065 USA

Rev. 15April16
SN: 100

LandMark™ 10 IMU



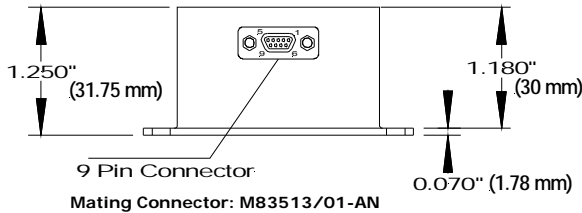
Axes (Top View)
Right Hand Rule



LandMark™ 10 IMU

LMRK10IMU-075-02-200 or -10
LMRK10IMU-150-02-200 or -10
LMRK10IMU-300-02-200 or -10

Specification



| Pin No. | Assignment |
|---------|------------------------------------|
| 1 | RS-485 A (+) |
| 2 | RS-485 B (-) |
| 3 | Power Ground |
| 4 | Analog/Digital Input (0V to 5V) |
| 5 | +3.1V to +5.5V Input Power |
| 6 | External Sync Input (1kHz or 1pps) |
| 7 | +5V Regulator Out |
| 8 | Signal Ground |
| 9 | Self Test |

Note: Any unused inputs (Pins 4, 6, 9) must be connected to signal ground (Pin 8).

| Outputs | Serial Sequence at 200Hz |
|---------|------------------------------|
| 1 | Roll Gyro (X) |
| 2 | Pitch Gyro (Y) |
| 3 | Yaw Gyro (Z) |
| 4 | X Accelerometer |
| 5 | Y Accelerometer |
| 6 | Z Accelerometer |
| 7 | Temperature ± 0.5° C typical |

* Contact Factory to Order VG Option

| PARAMETER | RATE AXES | | | ACCEL AXES | |
|-------------------------|---|--|------------------|-------------------|-------------------|
| | ±75°/sec | ±150°/sec | ±300°/sec | ±2 g's | ±10 g's |
| Range | ±75°/sec | ±150°/sec | ±300°/sec | ±2 g's | ±10 g's |
| Bias (Over Temp.) | <0.1°/sec 1σ | | | <3mg 1σ | <5mg 1σ |
| Bias (In Run Stability) | 25°/hour 1σ | | | 0.1mg 1σ | 0.25mg 1σ |
| Scale Factor Error % | ≤0.2% (over temperature) 1σ | | | | |
| Sensor Resolution | 0.007°/sec | | | 0.035mg | 0.25mg |
| Angle Random Walk | 0.012° /sec/√Hz 1σ | | | 0.07mg /√Hz 1σ | 0.15mg /√Hz 1σ |
| Alignment | 1 mrad 1σ | | | | |
| G-Sensitivity | <0.03°/sec/g 1σ | | | | |
| Self Test On | Δ 50 ± 25°/sec | | Δ 1.5g ± 0.5g | Δ 0.6g ± 0.4g | |
| Temp Range | Logic 1 = 3V to 5V at Pin 9 | | | | |
| Operating: | -40° C to +85° C | | | | |
| Non-Operating: | -55° C to +85° C | | | | |
| Update Rate | 500 Hz, 200 Hz, 100 Hz, or 10 Hz (user selectable) | | | | |
| Temp Sensors | 3 Internal Temperature Sensors | | | | |
| Start-up Time | < 0.3 sec at 200 Hz | | | | |
| Input Power | +3.1V to 5.5V Max. Input (single sided) | | | | |
| Power Consumption | 440 mW at 3.3V Typical 500 mW at 3.3V Maximum | | | | |
| Size | U.S.: | 1.97 x 1.77 x 1.25 = 4.4 in ³ | | | |
| | Metric: | 5 x 4.5 x 3.2 = 72 cm ³ | | | |
| Weight | ≤ 107 grams | | | | |
| Mounting | 4ea No.8 or M4 Screws | | | | |
| Shock | 500g's ½ sine 30 msec powered | | | | |
| Vibration | 6gRMS (20Hz to 2kHz ~ 10g accelerometers) | | | | |
| MTBF | 55,279 hrs (per MIL-STD-217F, Notice 2 based on AIC environment with ambient temperature at 40°C) | | | | |

Specification subject to change without notice



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Division of LKD Aerospace
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